Original article

Communication and adherence of patients at a South African public sector specialist psychiatric out-patient clinic

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Abstract

Background: The impact that communication has on adherence, considering outcomes such as patient satisfaction and recall of the content of encounters with health care providers, has been extensively reported on in the literature. The South African Depression and Anxiety Group (SADAG) developed a specific communication intervention program, which was implemented in a local public sector setting. **Objective**: To investigate the attendance and medication adherence of patients at the specialist psychiatric outpatient clinic of the Helen Joseph Hospital in Johannesburg, before and after the pilot implementation of this program. **Methods:** Included quantitative and qualitative methodologies. The retrospective component included a review of participants' demographic and clinical profile and medication adherence. The prospective, qualitative component included structured pre- and post-questionnaires. **Results:** The typical participant was female (76%), older than 40 years (58.2%) and unemployed (74.2%). Comparing the study and control groups, the communication program resulted in a higher post-intervention booking ratio for the Study group, while the diagnostic category of participants were associated with their understanding of their medication. **Discussion:** Being mindful of the noted limitations of this pilot project, the SADAG program or similar communication intervention strategy, should be a standard operational procedure in local South African state sector clinics.

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Keywords: Advocacy group partnership, communication intervention, medication adherence, clinic attendance.

Introduction

The terms "adherence" and "compliance" have been used interchangeably in different settings. Vermeire *et al*. noted that "compliance" is considered to have negative associations and suggests yielding or submission: "*Compliant patients 'submit' to the prescriptions of doctors and take their medicine, or follow their advice, a phrase that also means accepting punishment*"[1]. In contrast, "adherence" incorporates the broader notions of concordance (agreement and harmony), cooperation and partnership. For its 2001 "Adherence to Long-term Therapies Project", the World Health Organization (WHO) defined adherence as *"the extent to which a person's behaviour of taking medication, following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations from a health care provider"*[2]. In addition, the term "retention" which refers to the capacity to retain patients in active participation, has also been used recently in the context of the substance abuse treatment by, for example, Baltieri and Corrêa Filho[3]. In this regard, several client-centered factors (such as being younger, single social status and family alcoholism) and treatment-centered factors (such as a negative therapeutic alliance and inadequate engagement of family) have been associated with early discontinuation of alcohol abuse treatment with high rates of treatment abandonment and relapses during follow-up[4].

The impact that communication has on adherence, considering outcomes such as patient satisfaction and recall of the content of encounters with health care providers, has been extensively reported on in the literature. While Ley already commented on the relationship between communication and the outcome of treatment programs during the 1970's[5], Simpson *et al*. reported in the early 1990's on it, in terms of the "Toronto Consensus Statement"[6]. They noted that effective communication between doctor and patient is a central clinical function which cannot be delegated. Zolnierek and Dimatteo conducted a meta-analysis of published literature (1949 to 2008), using a random effects model[7]. They found physician communication to be significantly associated with patient adherence, with a 19% higher risk of non-adherence among patients whose physicians communicated poorly. They also reported that training physicians in communication skills resulted in substantial and significant improvements in patient adherence. Sanson-Fisher *et al*. also noted that effective communication skills can and should be taught to health care providers as part of their training[8]. In their qualitative review of the medical literature from 1970 to 2005, Jin *et al*. reported on factors affecting therapeutic adherence from the patient's perspective[9]. They identified patient-centered factors, therapy-related factors, socio-economic factors and patient-centered factors, with the latter including the patient-prescriber relationship and communication which, in particular, also had a significant effect on compliance.

Helen Joseph Hospital (HJH) in Johannesburg, South Africa, is a public sector regional referral hospital providing secondary and tertiary levels of care. Psychiatric services at the hospital consist of a 30-bed acute admission unit, as well as of consultation-liaison service and a specialist psychiatric out-patient clinic. As far as adherence of psychiatric in-patients is concerned, it was previously documented that 40-45% of patients routinely admitted, reported that they were non-adherent with their prescribed treatment prior to admission[10-12]. Due to the continuous re-admission of the same patients and to logistical problems at the clinic, it also became necessary to explore the extent to which patients at the HJH psychiatric out-patient clinic have an inadequate understanding of their maintenance care. In this context, it was proposed to collaborate with a prominent local advocacy group, the South African Depression and Anxiety Group (SADAG), to implement a communication intervention program on a pilot basis, and to assess its usefulness to improve adherence in this local public sector setting. SADAG is a non-profit, non-governmental organization established 18 years ago to provide a mental health care support network to users across South Africa. SADAG works closely with different groups of people with mental health related problems on an on-going basis, and became increasingly aware of the problem of non-adherence with medication and follow-up visits to care providers.

Also considering the impact that communication has on adherence, as emphasized by others, SADAG, in response, developed a communication intervention program, the "Reminder and Support Adherence Program" (RSAP), which was previously implemented in certain private practice settings. The RSAP consists of focused

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communication interventions, including: weekly phone calls; free telephonic counseling; reminder SMS-messages; brochures and information; SMS reminders for workshops, support groups and press notifications; an online website with information; monthly newsletters; and free support groups in different regions.

The purpose of this study was to investigate the attendance and medication adherence of patients for the maintenance of various psychiatric conditions at the HJH specialist psychiatric outpatient clinic, before and after the pilot implementation of specific communication interventions, using the SADAG RSAP. The objectives of this study were to: explore the basic knowledge and understanding of patients' conditions and treatment prior to the implementation of the proposed communication intervention program; implement the communication intervention program (RSAP) for an initial period of three months; document the experience and views of participants after the implementation of the RSAP; and compare medication and clinic attendance adherence at baseline and after the RSAP intervention.

Methods

The methods used included quantitative and qualitative methodologies. The retrospective, quantitative component included a review of participating patients' demographic and clinical profile and medication adherence prior to the intervention, in June 2012. The quantitative data was collected from the clinical records and variables reviewed included: age; gender; ethnicity; suburb; attendance of the previous booked clinic appointments; diagnoses; and prescribed treatment. Using Microsoft Excel (97-2013), descriptive statistical methods, including means and standard deviations for parametric variables, were used to analyze these variables. The prospective, qualitative component of the inquiry included: (1) a structured pre-questionnaire exploring patients' basic knowledge and understanding of their conditions and treatment (Addendum 1); (2) the three-month (July to September 2012) implementation of the structured SADAG RSAP; and (3) a structured post-questionnaire, exploring patients' experience to participate in the RSAP and of their subsequent understanding of conditions and treatment (Addendum 1).

Addendum 1

SADAG RSAP* PRE-QUESTIONNAIRE – KNOWLEDGE AND UNDERSTANDING OF CONDITIONS AND TREATMENT
1. DEMOGRAPHIC INFORMATION 1) Age; 2) Gender; 3) Race/Ethnic Group; 4) Marital Status; 5) Employment Status
2. CLINIC ATTENDANCE AND DIAGNOSTIC INFORMATION 6) Have you been to any other psychiatric clinic or hospital before? 7) Were you treated as an INPATIENT or OUTPATIENT? 8) Have you been to the Helen Joseph Psychiatric Unit/Outpatients before? 9) Were you treated as an INPATIENT or OUTPATIENT? 10) Do you know what you have been diagnosed with? 11) How often do you have to return to outpatients to see the doctor in the next 3 months?
3. MEDICATION ADHERANCE[1] 12) Do you know what medication that you receive from HJH Psychiatric Outpatient Clinic? 13) Do you know how often to take it and how many of the tablets at a time? 14) If you are unsure, what is it that you need to know about your medication? 15) When did you start to take your medication from Helen Joseph? 16) Are you able to take your medication as suggested by your doctor? 17) If NO, please give a reason why not? 18) Are you sometimes using alcohol or other substances, like cannabis, while also on medication? 19) Did the doctor explain to you how to take your medication? 20) Are you having any side-effects from your medication? 21) Are you currently making use using any support services such as?

[1] Morisky DE, Green LW, Levine DM. Concurrent and predictive validity of a self-reported measure of medication adherence. Med Care. 1986;24(1):67-74. * SADAG: South African Depression and Anxiety Group; RSAP: Reminder and Support Adherence Program.

SADAG RSAP* POST QUESTIONNAIRE – EVALUATION OF THE PROGRAM

1. RSAP IMPLEMENTATION 1) Did you receive the SMS reminders to take your medication? 2) Did you receive the SMS reminders to attend your next hospital visit? 3) Did you receive the telephone phone calls from a SADAG counsellor? 4) Did you find these calls helpful? 5) Did you receive the information brochure on your mental health condition? 6) Did you find the information brochure useful? 7) Did you attend the clinic when you were scheduled to do so? 8) Did you make use of the SADAG support group services suggested? 9) Were these SADAG support groups useful to you?
2. POST-PARTICIPATION ADHERENCE 10) Did you perhaps stop taking your medication for any reason? 11) Did you skip any of your medication doses? 12) Did you attend all your scheduled hospital appointments?
3. EVALUATING THE RSAP 13) Following the RSAP support program, do you now have a better understanding of your condition? 14) Following the RSAP support program, do you now have a better understanding of your medication? 15) How did you generally experience the SADAG RSAP support program? 16) Which part of the SADAG RSAP support program was the most helpful to you? 17) Which part of the SADAG RSAP support program was not helpful to you? 18) What can be done to make the SADAG RSAP support program more helpful? 19) Can you describe how the SADAG RSAP support program was useful in helping you to stay on your medication? 20) Can you describe how the SADAG RSAP support program was useful in helping you to attend your visits to the doctor at the clinic? 21) Can you describe how the SADAG RSAP support program was useful in helping you to collect your medication from to the pharmacy, or to go to the laboratory for tests? 22) Can you describe how the SADAG RSAP support program was useful in informing you about different mental health issues, conditions and treatment?

* SADAG: South African Depression and Anxiety Group; RSAP: Reminder and Support Adherence Program.

The sampling method used for recruiting participants in the questionnaires and the pilot communication intervention program was convenience sampling through an open invitation to clinic attendants while waiting for their doctors' appointment on subsequent clinic days during July to September 2012. No particular inclusion or exclusion criteria were set. Implementing the RSAP pilot program consisted of regular phone calls, as well as the other mentioned communication interventions. Completion of the questionnaires occurred during a personal discussion while waiting for their doctors' appointment, or if preferred, by telephone using a toll free SADAG line. Qualitative answers to more open-ended questions were analyzed using a content analysis approach by thematic coding of the written/transcribed verbal responses by participants.

The pre-questionnaire included items on: demographics (Questions 1-5), clinic attendance (Questions 6-11); and diagnosis and medication adherence (Questions 12-21). The medication adherence questions included were drafted while also considering the items from the Morisky 8-Item Medication Adherence Questionnaire[13]. During the study period, participants received logistical, psycho-educational and support interventions in terms of the RSAP over the following three months, according to a structured alert schedule and according to participants' preferences as indicated on the consent form. Access to psycho-educational information included the standardized SADAG Board approved brochures on major depression, bipolar mood disorder, anxiety disorders, schizophrenia, and substance use disorders. The post-intervention questionnaire was conducted after the three-month implementation period and included items on: the RSAP implementation (Questions 1-9); post-participation adherence (Questions 10-12); as well as evaluating the RSAP (Questions 13-22).

The study group was compared at baseline with a control group with regard to demographic, clinical and attendance profile. The control group consisted of randomly selected outpatients not participating in the RSAP. After the RSAP intervention, the groups were compared again with regard to their attendance during the subsequent

six months. Pre-intervention, the following data was collected for both groups: age; gender; diagnostic category; and their six-month booking ratio during January to June 2012 (number of visits attended/number of visits scheduled), while responses to questions relating to knowledge of medication and medication adherence were collected for the study group only from the pre-questionnaire. Post-intervention, data were collected on the groups' subsequent six-month booking ratios during July to December 2012; and, for the study group only, responses to questions relating to medication adherence and clinic attendance (from the post-questionnaire at three months after start of intervention). The study group itself was compared before and after the intervention with regard to the booking ratio and medication adherence. Within the study group, the relationship between age, gender, diagnostic category and booking ratio was assessed, as well as between selected measures in the pre- and post-intervention questionnaires.

Data analysis was carried out using SAS[14]. Between-group tests were conducted using the X^2 test to assess the relationships between categorical variables. Fisher's exact test was used for 2 x 2 tables or where the requirements for the X^2 test could not be met. The relationship between continuous and categorical variables was assessed by the t-test (or ANOVA for more than two categories). Where the data did not meet the assumptions of these tests, a non-parametric alternative, the Wilcoxon rank sum test (or the Kruskal-Wallis test for more than two categories) was used. The relationship between two continuous variables was assessed by Pearson's correlation coefficient. Where the data did not meet the assumptions of these tests, a non-parametric alternative, Spearman's rank correlation coefficient was used. Within-group tests for paired booking ratio data were carried out using the Wilcoxon matched pairs test. The 5% significance level was used throughout.

Ethical clearance for the study was obtained from the University of the Witwatersrand Human Research Ethics Committee. Information leaflets, consent forms and questionnaires were also translated into Afrikaans and isiZulu. Data obtained was analyzed and reported on anonymously and in a manner that doesn't allow for individual participants to be identified or recognized. In terms of the Mental Health Care Act[15], all patients at the HJH psychiatric outpatient clinic at the time of the study were voluntary users, and therefore considered to have the capacity to make an informed decision about their own mental health care and also to give personal informed consent to participate in this inquiry.

Results

Out-patients during January to June 2012

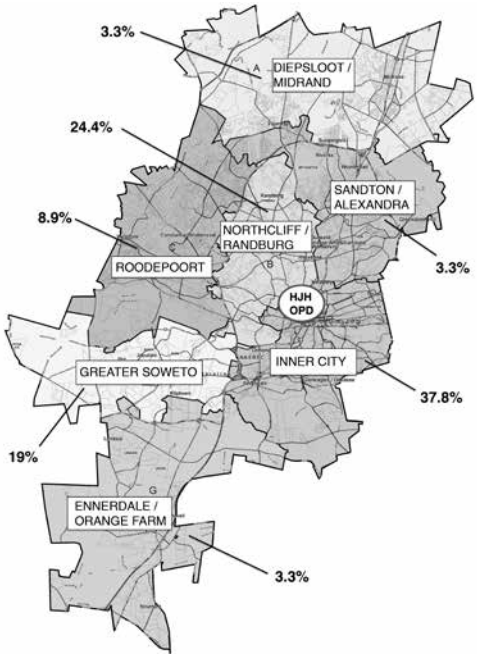
The total number of active psychiatric out-patients in June 2012, prior to the implementation of the RSAP, was 607. From these, a group of 91 patients (15%) was recruited to participate in the three-month implementation of the communication intervention program (RSAP), as well as in the pre- and post-questionnaires. Nobody who was approached declined, and recruitment continued until data saturation was achieved for the qualitative components of the questions included.

Demographic, clinical and geographic profile of RSAP participants

Participants included more females 76% (n = 69) than males 24% (n = 22), with a ratio of 3.1 to 1. The race distribution of participants was Black 34% (n = 31), White 35% (n = 32), Coloured 22% (n = 20) and Indian 9% (n = 8). The age of participants ranged from 17 to 73 years, with the mean age 41.9 years and a standard deviation of 13.95. While nearly two thirds (58.2%; n = 53) were older than 40 years, about a third (28.6%; n = 26) was between 40 and 49 years. More than two thirds (64.8%) of participants spoke English, with Afrikaans the second most common spoken language (19.8%). The remaining 15.4% (n = 14) spoke an African language (isiZulu). In terms of relationships, 39% (n = 36) participants were single, 29% (n = 26) were married, 13% (n = 12) divorced, 9% (n = 8) widowed, 9% (n = 8) were in a relationship at the time and one was engaged. More than two thirds (61.5%; n = 56) were not in a relationship with a partner at the time (single, divorced or widowed). The majority of participants (75%) were unemployed, and of the quarter of those who were employed (n = 23), 69.6% were working full-time (n = 16), and 30.4% part-time (n = 7). Of those who were in full-time employment, most of them 68.8% (n = 11) had to take the day off from work to attend the clinic. Table 1 provides a summary of participants' DSM IV-RT diagnoses and categories of medication[16]. Major depressive episode/disorder was the most common diagnosis (22%) documented for participants, followed by bipolar mood disorder (13.2%), anxiety disorders (9%) and psychosis due to general medical conditions (9%), for most participants (89%) more than one medication per patient were usually prescribed. The categories of medication prescribed for this group of patients at this state sector specialist psychiatric outpatient clinic, included: antidepressants (57%); antipsychotics (56%); mood stabilizers (38.5%); anxiolytic/sedative medication (31.8%); and other general medical treatment (17.6%). Most of the participants were from the Inner City region of Johannesburg – Region F (n = 34; 37.8%), while most of the others resided in Region B – Northcliff/Randburg (n = 22; 24.4%), Region D – Greater Soweto (n = 17; 19%) and Region C – Roodepoort (n = 8; 8.9%), figure 1. Three each were from Regions A, E and G and one participant resided outside the Johannesburg regional area.

Table 1. Participants' most common DSM IV-RT diagnoses and categories of medication

AXIS I – Major depressive episode/disorder (n = 20; 22%); bipolar mood disorder (n = 12; 13.2%); anxiety disorders (n = 8; 9%) and psychosis due to general medical conditions (n = 8; 9%)
AXIS II – Total n = 21: Cluster B or borderline personality traits (n = 14); intellectual impairment (n = 4); Cluster C or dependent personality traits (n = 3)
AXIS III – Documented for 48 participants: HIV/AIDS (n = 14); hypertension (n = 13); epilepsy (n = 9); diabetes mellitus, ischemic heart disease and metabolic syndrome (n = 5); neuro-syphilis (n = 2); and other (breast cancer n = 1; Parkinson's disease n = 1; Prader-Willi syndrome n = 1; head injury, n = 1; and stroke n = 1)
TREATMENT – Antidepressants (n = 52; 57%); antipsychotics (n = 51; 56%); mood stabilizers (n = 35; 38.5%); anxiolytics/sedative medication (n = 29; 31.8%) and other general medical treatment (n = 16; 17.6%); for most participants (n = 81; 89%) more than one medication were prescribed



KEY: Region A – Diepsloot, Midrand, Fourways, Sunninghill, Woodmead; Region B – Rosebank, Bryanston, Randburg; Region C – Bram Fischer, Thulani, Florida; Region D – Soweto; Region E – Parkwood, Highlands North, Alexandra, Wynberg, Morningside, Douglasdale; Region F – Glen Vista, Ormonde, City Deep, Benrose, Kensington; Region G – Lenasia, Eldorado Park, Protea.

Figure 1. Johannesburg Regional Map (www.joburg.org.za; Accessed 14 January 2013).

Pre-intervention questionnaire

Prevailing knowledge about clinic visits, diagnosis and treatment

Only 6.6 % (n = 6) of the 91 participants stated in their response to Question 10 that they did not know what their diagnosis was, while only 5.5% (n = 5) patients said they did not know how often they have to attend the clinic (Question 11). Table 2 summarizes participants' responses to selected items of the pre-intervention questionnaire (Questions 12-21).

Table 2. Participants responses to SADAG RSAP* Pre-Questionnaire's medication adherence items (n = 91)

Question 12. Do you know what medication that you receive from HJH Psychiatric Outpatient Clinic?	
YES n = 77; 84.6%	NO n = 14; 15.4%
Question 13. Do you know how often to take it and how many of the tablets at a time?	
YES n = 74; 81.3%	NO n = 17; 18.7%
Question 14. If you are unsure, what is it that you need to know about your medication?	
YES n = 27; 29.7%; on: potential adverse effects from the medication (n = 16); efficacy (n = 6), and dosage (n = 5)	NO n = 64; 70.3%
Question 16. Are you able to take your medication as suggested by your doctor?	
YES n = 74; 81.3%	NO n = 17; 18.7%
Question 18. Are you sometimes using alcohol or other substances, like cannabis, while also on medication?	
YES n = 35; 38.5% (cigarettes n = 21, 60%; alcohol n = 8, 22.8%; paracetamol n = 3, 8.6%; cannabis n = 3, 8.6%)	NO n = 56; 61.5%
Question 19. Did the doctor explain to you how to take your medication?	
YES n = 80; 87.9%	NO n = 11; 12.1%
Question 20. Are you having any side-effects from your medication?	
YES n = 73; 80.3%	NO n = 18; 19.7%
Question 21. Are you currently making use using any support services such as?	
YES n = 31; 34.1%	NO n = 60; 65.9%; but sought spiritual or religious support (n = 11) or other counselling (n = 10)

* SADAG: South African Depression and Anxiety Group; RSAP: Reminder and Support Adherence Program.

Knowledge of medication (Questions 12-14)

Of those (n = 77) who knew what medication they were supposed to take, when and how, 22 were diagnosed with major depressive disorder, 21 with psychosis due to general medical condition, 14 with anxiety, 12 with bipolar mood disorder, 7 with schizophrenia and for 2 the diagnosis was not specified.

Adherence to medication prior to RSAP (Question 16)

In terms of responses to this question, about 80.0% of the patients reported that they were taking their medication as suggested by their doctor. Seven of the self-reported non-adherent patients (n = 17) were diagnosed with major depressive disorder, four with psychosis or mood disorder due to a general medical condition, one each with schizophrenia and bipolar mood disorder and two with anxiety/personality problems or substance abuse. For two participants the diagnosis were not specified. Of the remainder, those who self-reported that they were actually able to take their medication as prescribed (n = 74; 81.3%), 18 were diagnosed with major depressive disorder, 19 with psychosis or mood disorder due to a general medical condition, 13 with anxiety/personality problems or substance abuse, 10 with bipolar mood disorder, 7 with schizophrenia and for 2 the diagnosis was not specified. For 5 of these participants no information was available. While only 17 participants actually volunteered that they were non-adherent, 60 of the 74 who indicated that they actually were adherent, did however give reasons for non-adherence to medication in the follow-up question (Question 17).

Reasons for non-adherence with medication (Question 17)

The most common reason indicated in response to this question was forgetfullness (28.6%; n = 26), or that they did not have anybody to remind them (24.2%; n = 22), figure 2. Participants also cited more than one reason for non-adherence to medication, which explains the difference in total number of responses. Only 12 (13%) reported that the reason for their non-adherence was in fact because of perceived adverse reactions of the medication, while 11% reported that medication was not available at the pharmacy. One in ten participants (10%) indicated that they felt they did not need medication.

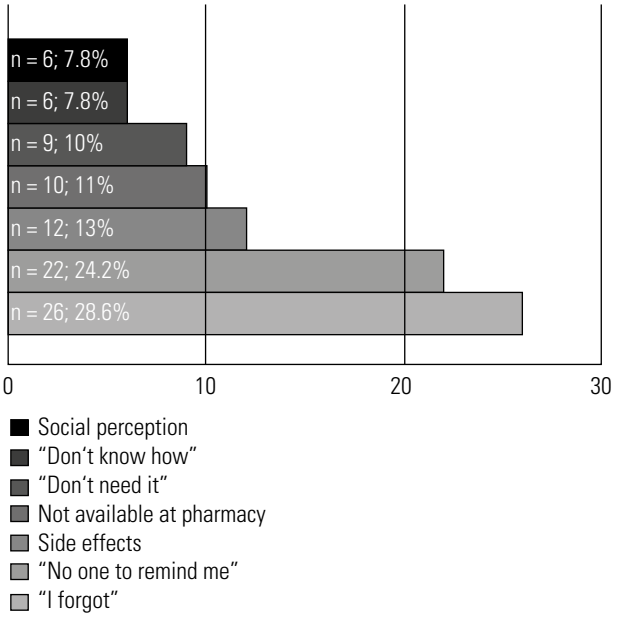


Figure 2. Reasons for medication non-adherence of HJH psychiatric out-patients in SADAG RSAP, Jul-Dec 2012 (n = 77).

Co-morbid substance abuse (Question 18)

Only a third of participants (31.4%; n = 11) were admitting to alcohol and cannabis use while they were being followed up as out-patients during this period.

Understanding of purpose and function of medication (Question 19)

About two thirds (62.6%; n = 57) of participants confirmed that their doctor explained to them any possible adverse reactions they might have, while only 21.9% (n = 20) said that their doctor explained to them how to cope with these possible adverse reactions.

Reported adverse effects of medication (Question 20)

Although all those who have self-reported perceived adverse reactions indicated that they have experienced more than one adverse effect, it was noted that despite of this, only 12 (13%) indicated adverse side effects of medication as a reason for medication non-adherence. The most common adverse effect reported was having headaches (13%), while fewer experienced having a dry mouth (11.6%), poor sleep (11%), and an increased appetite (10.4%).

A decreased appetite was mentioned as the fifth most common adverese reaction (7.8%). At this stage, prior to the 3-month RSAP, two thirds (n = 48; 66%) of those who reported side effects, stated that they were, however, coping fine with the reported adverse reactions, while 19.2% (n = 14) said they were trying to cope and 15.1% (n = 11) said they were not coping very well.

Implementing the RSAP

Phone calls

During the RSAP intervention, a total of 642 personal phone calls were made according to the described specified structured alert schedule, with each participant receiving and average of 7.3 calls during a 13 week (91 day) period.

Additional communication activities

The communication activities (SMS reminders and other notifications) which occurred during the RSAP were summarized in table 3. All the reminders and notifications included the SADAG toll-free helpline number. Monthly electronic newsletters were also made available to patients, however, only 35.2% (n = 32) had access to internet or email to receive this intervention. As noted, these additional communication activities included: short message system (SMS) notifications; medication reminders; motivational SMS messages; support group notifications; press notifications; appointment and script reminders; and brochures/information.

Table 3. Communication activities during the implementation of the RSAP

	Average received per participant	Total received by all participants
Medication Reminders	39.6	3484
Motivational SMS	14.1	1238
Support Group Notifications	2.1	182
Press Notifications	2.4	208
Appointment Reminders	3	265
Script Reminders	3	265
Brochure/Information Reminders	3	182

Post-intervention questionnaire

Of the 91 participating users who initially completed the pre-intervention questionnaire, 88 completed the full 3-month RSAP program. Regarding the three who were withdrawn, one participant was referred to a different outpatient facility closer to her residence, while another went abroad for nearly half of the program. A third participant did not have a mobile phone for the duration of the program and were therefore not included, as she was unable not receive the reminder messages. The SADAG RSAP post-questionnaire included items on: the RSAP implementation (Questions 1-9 – medications reminders, appointment reminders, phone calls, information and brochures, support group attendance); post-participation adherence (Questions 10-12 – medication adherence, support group attendance); as well as evaluating the RSAP (Questions 13-22 – post-participation understanding of diagnosis and medication). Table 4 summarizes participants' responses to selected items of the post-intervention questionnaire.

According to responses to post-intervention Questions 10 and 11, 98.6% of the patients reported that they did not stop taking their medication for any reason, nor did they skip any doses. Only one patient did not answer the first question and was 'unsure' about the second. In terms of medication adherence (Question 11), only 11.4% (n = 10) of participants after the intervention indicated that they skipped doses of their medication during their participation in the RSAP. The majority 88.6% (n = 78) now indicated that they took their medication as prescribed by their doctor. None of the patients indicated that they have stopped taking their medication completely.

While all participants indicated afterwards that they had a better understanding of their medication, some did report limitations which included problems with obtaining and reading the educational material. Reasons for this were stated to be cost related (*e.g.* recommended magazines), access to internet, or their own literacy in English. Although patient information and questionnaires for this study were translated into Afrikaans and Zulu, the SADAG educational material on diagnoses and treatment was available only in English. In addition, radio and TV programs were reported to be helpful. In terms of the improvement of attending support group activities, for example, prior to the RSAP intervention the majority of the patients (65.9%) were not actually making use of any other additional mental health support services, and only 4.6% were attending a support group (pre-questionnaire). After the program, about 10% of participants reportedly attended at least one session at a support group during the study period. Qualitative themes from the post-questionnaire included participants' stated reasons for this non-attendance of support groups as being logistical (not having transport) 44%, and financial problems (32%). In terms of evaluating the design, incorporated items and the actual implementation of the SADAG RSAP, the increased regular communication through telephone calls and SMS reminders, as well as the additional logistical assistance provided, were regarded by all participants as to have been of great value to them. The SMS messages in particular were identified as most helpful as reminders to take medication, while the telephone calls were appreciated as participants had the experience that they "were not alone", that "someone was there for them" and that "someone cared".

Table 4. Participants responses to the SADAG RSAP* Post-Questionnaire (n = 88)

1. RSAP IMPLEMENTATION	
Question 1. Did you receive the SMS reminders to take your medication?	
YES n = 88; 100%	NO n = 0; 0%
Question 2. Did you receive the SMS reminders to attend your next hospital visit?	
YES n = 71; 80.6% (always); n = 17, 19.4% (sometimes)	NO n = 17; 19.3%
Question 3. Did you receive the telephone phone calls from a SADAG counsellor?	
YES n = 84; 95.5% (always)	NO n = 4; 4.5% (sometimes)
Question 5. Did you receive the information brochure on your mental health condition?	
YES n = 88; 100%	NO n = 0; 0%
Question 8. Did you make use of the SADAG support group services suggested?	
YES n = 9; 10.2%	NO n = 79; 89.8%
2. POST-PARTICIPATION ADHERENCE	
Question 11. Did you skip any of your medication doses?	
YES n = 10; 11.4%	NO n = 78; 88.6%
Question 12. Did you attend all your scheduled hospital appointments?	
YES n = 84; 95.5%	NO n = 4; 4.5%
3. EVALUATING THE RSAP	
Question 13. Following the RSAP support program, do you now have a better understanding of your condition?	
YES n = 88; 100%	NO n = 0; 0%
Question 14. Following the RSAP support program, do you now have a better understanding of your medication?	
YES n = 71; 80.7% ; n = 4; 4.5% (somewhat)	NO n = 13; 14.8%

* SADAG: South African Depression and Anxiety Group; RSAP: Reminder and Support Adherence Program.

Comparisons between study and control groups

Of the 88 participants completing the RSAP, data on clinic attendance during January to June 2012 was available for 70. Data was collected for this group as the "Study group", which was then compared with a randomly selected "Control group" of 70 patients who attended the HJH out-patient clinic during both six month periods, but did not participate in the RSAP. At the 5% significance level, assuming a power of 80% and using small, medium and large effect sizes (d = 0.3, 0.5 and 0.8 respectively), sample sizes of 94, 35 and 15, were required respectively. The sample size of 70 used for this study was thus regarded adequate for the detection of only fairly large effect sizes (up to d = 0.35).

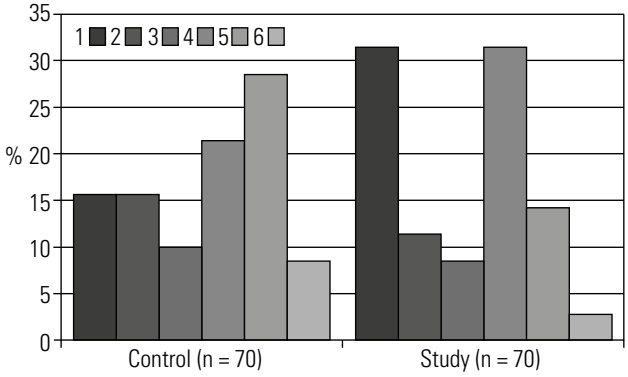
Study group and Control group at baseline (pre-intervention)

Age – There was no significant difference in the median age between the two groups (Wilcoxon rank sum test: p = 0.53). For further analysis, age was grouped in 17 to 29 years, 30 to 39 years, 40 to 49 years and older than 50 years, with also no significant between-group difference (chi-square test: p = 0.63).

Gender – A significant difference was shown for the gender composition of the Study and Control groups (Fisher's exact test: p = 0.017; phi coefficient = 0.22). The proportion of males in the Study group (21.4%) was significantly lower than those in the Control group (41.4%).

Diagnostic category – Considering the required DSM IV-TR criteria, the two groups were organized in six categories: depressive disorders (*e.g.* major depression, dysthymia); bipolar mood disorder; psychotic disorders (schizophrenia, schizo-affective disorder and not specified); general medical conditions related disorders (psychosis, mood), as well as dementia and intellectual impairment; anxiety disorders, substance related disorders and conditions, as well as personality related problems; and lastly "no diagnosis" (Figure 3). No significant between-group difference was found (chi-square test: p = 0.054).

Booking ratio – Where no appointments were scheduled for a participant, it was not possible to compare the booking ratio. In the pre-intervention period, this only affected three patients in the Study group, while many patients in the Control group were affected, as they only started attendance in the second half of 2012. Of a total of 90 appointments made pre-intervention for 44 patients in the Control group, 63 appointments were kept (70%). Of a total of 157 appointments made for 67 patients in the Study group during the same period, 120 appointments were kept (76%). Booking ratio data were available for 67 of 70 of the Study group, but only for 44 of 70 of the Control group. At baseline, there was no significant difference found in the median booking ratio between the two groups (Wilcoxon rank sum test: p = 0.94).



1 – Depressive disorders (*e.g.* major depression, dysthymia); **2 –** Bipolar mood disorder; **3 –** Psychotic disorders (schizophrenia, schizo-affective disorder and not specified); **4 –** General medical conditions related disorders (psychosis, mood), as well as dementia and intellectual impairment; **5 –** Anxiety disorders, substance related disorders and conditions, as well as personality related problems; **6 –** No diagnosis.

Figure 3. Diagnostic category HJH psychiatric outpatients Study and Control groups at baseline prior to intervention (June 2012)

Study group and Control group after intervention

Booking ratio – Booking ratio data for the post-intervention period was available for all the patients (Figure 4). Of a total of 124 post-intervention period appointments made for 70 patients in the Control group, 82 appointments were kept (66%). Of a total of 209 post-intervention period appointments made for 70 patients in the Study group, 155 appointments were kept (74%). Considering the post-intervention period booking ratio as a function of group (Study/Control) while controlling for the pre-intervention period booking ratio, the post-booking ratio is expected to differ between groups if there is a group effect. While taking the limitation of missing data at pre-intervention for the control group into account, this model has been shown to be significant with n = 111; F (2,108) = 4.73, and p = 0.011, while the effect of group was also significant (p = 0.0084). Controlling for the pre-intervention booking ratio, the Study group demonstrated a higher post-intervention period booking ratio (by 0.17) than the Control group. The effect of the pre-intervention booking ratio itself was not significant (p = 0.16). When considering the full data set, comparing the post-intervention period booking ratio between the two groups, no significant difference in the median booking ratio between the two groups was showed (Wilcoxon rank sum test: p = 0.89).

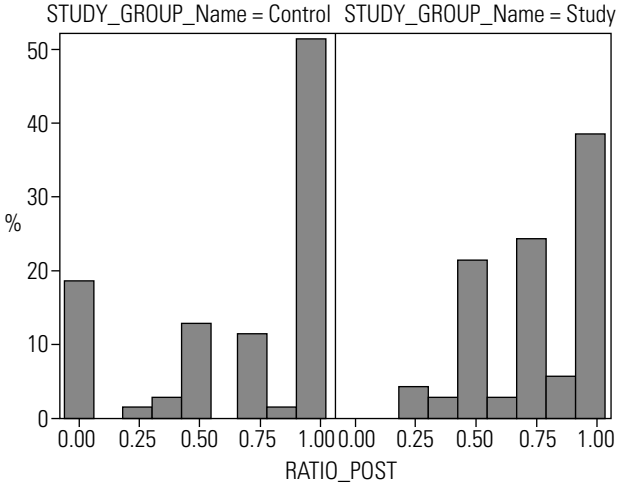


Figure 4. Booking ratio HJH psychiatric outpatients: Study and Control groups after intervention (July to December 2012).

Comparison of Study group before and after intervention

For the 67 Study group patients who had pre-intervention and post-intervention study group data, there was no significant change in the booking ratio between the two time periods (paired t-test; p = 0.76). A comparison of medication adherence before and after intervention was not possible because the question(s) used to determine medication adherence pre- and post-intervention were not the same.

Factors associated with adherence

For the Study group, associations were examined between age, gender, diagnostic category and pre-intervention booking ratio, as

well associations between selected measures in the pre- and post-intervention questionnaires. With regard to medication adherence, two sets of composite scores were calculated. Pre-intervention for this group, a composite score (Score A) was derived from Questions 12, 13, 14 and 16 of the pre-questionnaire, such that "0" equaled a poor understanding of medication and "4" equaled a high understanding (Table 5). Post-intervention, a composite score (Score B) was derived from Questions 11, 12, 13 and 14, such that "0" equaled a poor understanding of condition/treatment/medication and "4" equaled a high understanding. A significant (lower) association was found for the Diagnostic category and the pre-intervention composite Score A (Kruskal-Wallis test; p = 0.044). Post-hoc tests showed that the Score A median for Category 6 – "No diagnosis" (median 0.5), was significantly lower than that for Categories 1 (Depressive disorders), 2 (Bipolar mood disorder), 4 (General medical conditions related disorder) and 5 (Anxiety, Substance related and Personality disorders) – median 4.0. These effect sizes were moderate, however, given that there were only two patients in Category 6, these results must be interpreted with caution. There were no other significant associations.

Table 5. HJH psychiatric outpatients Study Group composite scores for medication adherence pre- and post-intervention

p-value for H0: no association	Score A Pre-intervention*	Score B Post-intervention#
Age category	0.34	0.15
Gender	0.20	0.10
Diagnostic category	**0.044**	0.68
Pre-intervention booking ratio	0.85	0.63

* Composite score compiled form Questions 12, 13, 14 and 16 of pre-questionnaire; # Composite score compiled from Questions 11, 12, 13 and 14 of post-questionnaire.

Discussion

Specific limitations of this pilot study include, firstly, that the sampling method used did not result in a representative randomized sample, and secondly, as a partial retrospective study, data on all the demographic and clinical variables of users was not always available for all participants. Results from this sample can therefore not be extended to the total group of existing outpatients. However, despite the pilot nature of this investigation, certain useful statistical analyses of data were performed while the limitations in this regard were noted. In addition, the general problem of positive self-reporting when using self-rating scales must also be taken into account. The findings of this study may therefore have been influenced by overly positive self-reporting by a group of participants who, in this case, may have had "more adherent attributes" to gravitate towards more contact, compared to self-selected non-participants who, due to the extent of their symptoms and nature of their diagnosis, or existing non-compliance, may have been more reluctant to participant and more inclined to avoid additional contact with the clinic or caregivers at the clinic. Randomized and stratified representative sampling must therefore be considered in any future follow-up studies. In terms of the design of the questionnaires, in order to allow for comparisons to be made before and after intervention, the same questions inquiring about medication and attendance adherence should have been included in the pre- and post-questionnaires. In fact, the use of a previously validated scale for measuring adherence should have been advised, rather than a questionnaire which only included some of the Morisky 8-item Medication Adherence Questionnaire (MAQ)[13]. Lastly, although all participants had mobile phones to receive SMS messages, another limitation was that not all had access to the internet to receive the monthly newsletters or educational material.

Although the typical participant in the RSAP was female (76%), either Black (34%) or White (35%), older than 40 years (58.2%), unemployed (74.2%), not in a relationship with a partner (67.6%) and mostly spoke English as home language (64.8%), Vermeire *et al.*[1], as well as Yeğenoğlu *et al.*[17], noted that demographic variables were poor indicators of compliance. Another local study on medication adherence of psychiatric patients in an outpatient setting in KwaZulu-Natal[18], using the 8-item Morisky MAQ, however, did find race and age to be significant predictors of medication adherence. While keeping in mind that the study by Bulloch and Patten was conducted in a large general Canadian population sample, it was noted though that the finding of this small pilot study in a local South African clinical setting, seems to concur with theirs, that "forgetting" was the most common reason reported (52.8%) for not being adherent with medication[19].

Considering the pilot nature of this investigation, certain statistical analyses of data were performed and while limitations in this regard were noted, some observations were made including that significantly more females participated in this study compared with the Control group. It was also shown that the RSAP intervention resulted in a higher post-intervention booking ratio for the Study group compared with the Control group, and that the diagnostic category of participants were significantly associated with their understanding of their medication. In a comparable study, Heyscue *et al.* examined whether patients' geographic location and socio-demographic characteristics and characteristics of their medication use were related to adherence with a long-acting injectable regimen in a group of outpatients with schizophrenia[20]. They found that compliance was associated with a history of substance abuse (poorer) and the duration of illness (better).

A possible explanation for the positive results found comparing the Study and Control groups may include that males were not effectively targeted by the non-random, non-stratified sampling method used in this study. While there were no significant difference with regard to the attendance of booked visits between the Study and Control group before intervention, a significant difference was found between the two groups for attended visits after the three-month implementation of the RSAP. The finding that post-intervention the Study Group attended 74% of booked visits, compared to 66% by the non-participating Control Group seems to be a provisional indication that the RSAP did result in a relatively significantly improved booking ratio for participants in the program. This finding will however have to be confirmed in a longer term follow-up study. Negative results regarding changes pre- and post-intervention within the Study group include the finding that there was in fact no significant change in the booking ratio for the Study Group between the two time periods. This implies that the pilot implementation of the RSAP per se did not result in an improvement of the attendance rate of the participants in the program. The only other tentatively positive finding was the lower association found for the pre-intervention composite Score A and the sixth diagnostic category ("No diagnosis") compared to four other diagnostic categories (1, 2, 4 and 5). As mentioned, because of the limited numbers, no actual significance have been attributed to this.

This study at HJH also concurs with the review by Vermeire *et al.* that side-effects were only self-reported by a small proportion (10-15%) of patients as a reason for non-compliance[1]. Substance abuse as a contributing factor to non-adherence was relatively underreported in this study as well, although 30% of this clinically stable study sample reported that they concurrently used alcohol and/or cannabis with their medication (Question 20). Secondary non-adherence usually includes patients who are taking incorrect doses, or at wrong times, forgetting one or more doses of the medication, or who are stopping too soon, either by ceasing to take the medication, or by failing to obtain a repeat prescription due to unavailability, inaccessibility or cost. Participants in this study also reported "secondary" non-adherence, such as the unavailability of medication at the pharmacy, as well as stigma related reasons, such as doubting the efficacy of medication, or as a result of their perception about society's negative view of psychiatric treatment. With regard to attitudes towards antidepressants, Castaldelli-Maia *et al.* noted for example, that stigma against depression differs from stigma against the use of antidepressants, with the latter seemingly more related to associations with emotional weakness and an inability to deal with problems[21]. Reviewing associations with the diagnosis of

schizophrenia in the Brazilian media, Guarniero *et al*., confirmed that texts from the printed media reviewed seem to still reinforce existing stigma by superficially referring to the diagnosis and by trivializing it out of context[22].

Considering participants' initial responses in this pilot study to questions regarding communication by doctors about their clinic visits, diagnoses and medication (Questions 10, 11, 13 and 14), it seems that adequate communication was actually taking place in this regard. A somewhat contradicting response was observed regarding Questions 16 and 17, where only a relatively small proportion of responders (18.7%) volunteered non-compliance, while many more (65%) gave reasons for non-compliance. This can be interpreted that non-adherence was actually much higher and that overly positive self-reporting could have influenced this finding. With regard to the effect on compliance with medication by patients experiencing adverse effects, it should also be considered to what extent patients reported real or perceived adverse effects as a result of medication use, or whether the symptoms reported may have been due to another cause. While 80.2% of participants in this study self-reported that they were experiencing adverse effects from the medication, only 13% has actually indicated this as a reason for non-adherence to medication. This may also have been because participants wanted to portray a more positive picture of the actual situation.

Considering the subjective qualitative responses from participants to the post-questionnaire, as well as the pre- and post-intervention booking ratios for the Study Group before and after the communication intervention program, it seems that the pilot implementation of the SADAG RSAP at HJH did result in some noteworthy improved adherence. While this may be encouraging, it may, however, also be argued that the improved clinic attendance observed, was not necessarily due to the specific design of the RSAP per se, but that any improvement on the pre-existing poor level and quality of communication at this clinic, would have motivated patients to attend better. The particular communication activities, relative to other, which would be most helpful in this state sector setting will therefore still have to be established more clearly through further follow-up study and comparison.

Conclusion

The partnership with a local mental health advocacy group to implement and investigate the effect of a particular communication intervention program in patients at a South African public sector psychiatric out-patient clinic, was a first attempt of this nature in the local context. Cognizant of the study's listed limitations as a pilot investigation, and although further sophistication and specification may be required, the implementation of the SADAG RSAP, or a similar communication intervention strategy, should be considered as a standard operational procedure in all existing local state sector specialist psychiatric outpatients clinics, such as this clinic at HJH.

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Conflict of interest

None.

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